

WHAT IS CLAIMED IS:

1. A reproduced signal waveform processing apparatus,
comprising:
 - 5 a feedback loop comprising
sampling means for sampling a reproduced signal at an
interval of a reproducing clock signal generated at a
predetermined oscillation frequency;
a first equalizer for equalizing a digital reproduced
10 signal obtained by the sampling means;
phase frequency control means for detecting a phase
error at a frequency between the digital reproduced signal
equalized in the first equalizer and the reproducing clock
signal, and outputting a control signal in accordance with
15 phase frequency error information between the digital
reproduced signal and the reproducing clock signal; and
oscillation means for varying a oscillation frequency
in accordance with an instruction from the phase frequency
control means,
 - 20 wherein the feedback loop is a synchronization circuit
that functions as a phase locked loop (PLL) for synchronizing
frequency phase between the digital reproduced signal and the
reproducing clock signal, and
wherein the reproduced signal waveform processing
25 apparatus further comprises a second equalizer connected in
series with the first equalizer.
2. The reproduced signal waveform processing apparatus
according to Claim 1,
 - 30 wherein the second equalizer means comprises an
adaptive equalizer having an automatic equalization

function.

3. The reproduced signal waveform processing apparatus according to Claim 1,

5 wherein the first equalizer comprises an IIR filter.

4. The reproduced signal waveform processing apparatus according to claim 1,

10 wherein the phase frequency control means comprises a FIR filter.

5. The reproduced signal waveform processing apparatus according to claim 1,

15 wherein an operating clock of the feedback loop is operated at a frequency that is a multiplication of an operating clock of the second equalizer.

6. The reproduced signal waveform processing apparatus according to claim 1, further comprising:

20 a decimation filter provided between the first and the second equalizers for absorbing a difference in operating clocks of the first and the second equalizers, and

a frequency divider for dividing the reproducing clock signal in the feedback loop and generating a reproducing clock
25 signal that is supplied to the second equalizer.

7. The reproduced signal waveform processing apparatus according to claim 1,

30 wherein the sampling means is an analog/digital converter.